

## Listing Of Claims

Claims 1-31 (canceled)

32. (currently amended) A system for bonding external contacts to contact pads on semiconductor components comprising:

~~a polymer flux; and~~

a flux dispensing mechanism;

~~configured to deposit the flux onto the contact pads;~~

the a polymer flux comprising a polymer resin, a fluxing agent and a curing agent; and

a polymer support member on each contact pad comprising a cured droplet of the polymer flux supporting an external contact.

~~configured for deposition by the mechanism on the contact pads as a viscous non flowing droplet able to support and electrically insulate the external contacts on the contact pads for bonding, a fluxing agent in the polymer resin configured to clean the contact pads and a curing agent in the polymer resin configured to cure the polymer resin on the contact pads into a polymer support member for the external contact.~~

33. (currently amended) The system of claim 32 further comprising a placement mechanism configured to place the external contacts on the ~~droplets and~~ contact pads.

34. (currently amended) The system of claim 32 further comprising a furnace configured to ~~reflow bond the external contacts to the contact pads and to~~ heat the polymer flux. ~~for curing.~~

35. (original) The system of claim 32 wherein the external contacts comprise solder balls.

36. (original) The system of claim 32 wherein the polymer resin comprises a material selected from the class consisting of epoxy, silicone and rubber.

37. (original) The system of claim 32 wherein the curing agent comprises a solvent or a reactant and the fluxing agent comprises an acid.

38. (original) The system of claim 32 wherein the curing agent and the fluxing agent comprise a same chemical compound.

A2  
39. (currently amended) The system of claim 32 wherein the ~~droplet~~ has polymer support member comprises a donut shaped structure having a thickness on the contact pad of from one tenth to one half a diameter of the external contact.  
~~-solder ball.~~

40. (original) The system of claim 32 wherein the component comprises a semiconductor package, a semiconductor wafer or a semiconductor die.

A3  
41. (currently amended) A system for fabricating an external contact on a semiconductor component having a contact pad comprising:

~~an electrically insulating~~

a polymer flux comprising a polymer resin, a plurality of solder particles, ~~in the polymer resin configured to coalesce into a solder bump,~~ a fluxing agent, ~~in the polymer resin configured to clean the contact pad,~~ and a curing agent;

~~in the polymer resin configure to cure the polymer resin into a polymer support member for the solder bump, the~~

~~polymer flux having a viscosity at room temperature that permits deposition as a viscous non-flowing droplet;~~

~~a flux dispensing mechanism configured to deposit the a droplet of the polymer flux on the contact pad; and~~

~~a solder bump on the contact pad comprising coalesced solder particles in the droplet; and~~

~~a polymer support member on the contact pad comprising cured polymer resin in the droplet supporting the solder bump.~~

13 ~~a furnace configured to heat the polymer resin and the solder particles to a temperature sufficient to bond the solder particles to the contact pad and to cure the polymer resin into the polymer support member.~~

42. (currently amended) The system of claim 41 further comprising a furnace configured to heat the polymer resin and the solder particles to a temperature sufficient to bond the solder particles to the contact pad.

~~wherein the flux dispensing mechanism comprises a screen printing mechanism.~~

43. (original) The system of claim 41 wherein the component comprises a package, a die, or a wafer.

44. (original) The system of claim 41 further comprising a conveyor configured to move the component.

45. (original) The system of claim 41 wherein the fluxing agent comprises an acid and the curing agent comprising a solvent.

14 46. (currently amended) A system for bonding an external contact to a contact pad on a semiconductor component comprising:

a solder ball having a diameter;

a polymer flux comprising a polymer resin, a fluxing agent and a curing agent;

~~configured for deposition on the contact as a droplet of flux that supports the solder ball for bonding to the contact pad and electrically insulates at least a portion of the external contact,~~

14 ~~the polymer flux comprising a polymer resin curable on the contact pad to form a polymer support member for the solder ball, a fluxing agent in the polymer resin configured to clean the contact pad, and a curing agent in the polymer resin configured to cure the polymer resin into the polymer support member,~~

a flux dispensing mechanism configured to dispense ~~the~~ a droplet of the polymer flux on the contact pad; and

a polymer support member on the contact pad comprising cured polymer resin in the droplet having a thickness which is less than the diameter of the solder ball.

~~a furnace configured to heat the polymer flux and the solder ball to a temperature sufficient to cure the polymer flux and to bond the solder ball to the contact pad.~~

47. (original) The system of claim 46 further comprising a placement mechanism configured to place the solder ball on the contact pad.

48. (original) The system of claim 46 wherein the polymer resin comprises a material selected from the class consisting of epoxy, silicone and rubber.

49. (original) The system of claim 46 wherein the curing agent comprises a solvent or a reactant.

50. (original) The system of claim 46 wherein the fluxing agent comprises an acid.

51. (original) The system of claim 46 wherein the droplet has a thickness on the contact pad of from one tenth to one half a diameter of the solder ball.

52. (original) The system of claim 46 wherein the component comprises a semiconductor package, a semiconductor wafer or a semiconductor die.

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AS 53. (new) A system for bonding a solder ball to a contact pad on a semiconductor component comprising:

a polymer flux comprising a polymer resin, a fluxing agent and a cleaning agent;

a flux dispensing mechanism configured to deposit a droplet of the polymer flux onto the contact pad;

a placement mechanism configured to push the solder ball through the droplet into contact with the contact pad; and

a donut shaped polymer support member on the contact pad encompassing a base of the solder ball, the member comprising cured polymer resin in the droplet.

54. (new) The system of claim 53 wherein the flux dispensing mechanism comprises an element selected from the group consisting of a positive displacement mechanism, a screen printing mechanism and a pin transfer mechanism.

55. (new) The system of claim 53 further comprising a furnace configured to reflow the solder ball and cure the droplet.

56. (new) The system of claim 53 wherein the polymer flux has non flowing characteristics at a temperature between 15.5°C to 37.8 °C.

57. (new) The system of claim 53 wherein the fluxing agent has a volume percentage in the droplet of from 0.1% to 16%.

58. (new) A system for fabricating an external contact on a semiconductor component having a contact pad comprising:

a polymer flux comprising a polymer resin, a plurality of solder particles, a fluxing agent, and a curing agent;

a flux dispensing mechanism configured to deposit a droplet of the polymer flux on the contact pad;

AS a furnace configured to heat the component and the droplet;

a solder bump on the contact pad comprising coalesced solder particles in the droplet; and

a polymer support member on the contact pad comprising cured polymer resin in the droplet encompassing a base of the solder bump.

59. (new) The system of claim 58 wherein the flux dispensing mechanism comprises a screen and a squeegee.

60. (new) The system of claim 58 wherein the polymer flux has non flowing characteristics at a temperature between 15.5°C to 37.8 °C.

61. (new) The system of claim 58 wherein the fluxing agent has a volume percentage in the droplet of from 0.1% to 16%.

62. (new) The system of claim 58 wherein the furnace comprises a two stage furnace.

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